



AMENDMENTS TO THE CLAIMS

1. (currently amended) A method for dispensing droplets of a liquid to a microsystem in the form of a disc ~~comprising~~ having a target area ( $TA^0I$ ) in its surface which comprises ~~, said disc preferably being a microfluidic disc comprising a microchannel structure I with an inlet port that is equal to said target area,~~ **characterized by comprising** the steps of:

i) providing (1) said disc which has a triggering mark, ~~preferably in the circumference,~~ and (2) a dispenser arrangement comprising:

- a) a spinner for rotating the disc around its axis,
- b) a drop dispenser permitting dispensation of droplets from a dispenser orifice of said drop dispenser to the target area  $TA^0I$  ~~to inlet port I,~~
- c) a fixed trigger position outside the disc, and
- d) a controller which is capable of triggering a dispensing signal, which causes ~~the dispensation of a droplet~~ one or more droplets from said dispenser orifice into the target area ( $TA^0I$ ) as a function of the triggering mark passing the trigger position;

ii) placing the disc in the spinner and programming the controller with values for one or more dispensing parameters

that will give dispensation of the droplets to the target area  
TA<sup>0</sup>I; and

iii) dispensing the droplets while spinning the disc.

2. (currently amended) The method of claim 1, wherein  
~~characterized in that~~ said parameters are selected amongst from  
the group consisting of

- (a) speed of rotation of the disc (angular velocity  $\omega$ ),
- (b) the revolutions under which dispensation is to take place  
and/or the frequency  $f'$  of droplet dispensation to the target  
area ~~TA-I~~ TA<sup>0</sup>I,
- (c) shape of the dispensing signal, ~~for instance amplitude,~~  
~~and/or frequency f of dispensing pulses etc,~~
- (d) delay T<sub>elec</sub> between the signal from the trigger position and  
the actual dispensing of a droplet,
- (e) distance  $h$  between the dispenser orifice and the disc, and
- (f) radial movement and/or radial position of the dispenser  
orifice.

3. (cancelled)

4. (currently amended) The method of claim 2 ~~3, characterized~~  
~~in~~ wherein

i) the liquid comprises a gradient with respect to at least one of its constituents; and

ii) that the value for at least one of the parameters (a), (c), (d), and (e) is adjusted during the dispensation to compensate for the change in velocity of the droplets which possibly is caused by the gradient, ~~said adjustment preferably being handled by the~~ controller.

5. (currently amended) The method of claim 1, ~~characterized in that~~ wherein the disc is a microfluidic disc having a microchannel structure I comprising

a) an inlet port that is equal to the target area  $TA^0I$ , and

b) ~~that said microchannel structure I comprises a microcavity positioned downstream to~~ the target area  $TA^0I$  and used for carrying out a chemical or biological experiment.

6. (currently amended) The method of claim 5, ~~1, characterized in that~~ wherein said liquid comprises a gradient which is defined as a change in salt concentration, kind of salt, pH, composition of solvents and/or some other component/components that interferes/interfere with an experiment which is carried out in the microcavity.

7. (currently amended) The method of claim 5, ~~or 6,~~  
~~characterized in that~~ wherein the microcavity contains a separation  
media in the form of a porous bed, ~~for instance a porous monolith~~  
~~or a packed bed of porous or non-porous particles that may be in~~  
~~beaded form and/or are monosized (monodispersed) or polysized~~  
~~(polydispersed).~~

8. (currently amended) The method of claim 7, ~~characterized in~~  
~~that~~ wherein the method comprises

- a) dispensing a liquid sample (liquid 1) to a sample inlet port  
of said microchannel structure I, which sample contains at  
least one substance that is capable of binding to the bed when  
passing through it, and
- b) subsequently dispensing an eluent (liquid 2) to an inlet port  
of said microchannel structure I for releasing at least a  
portion of said at least one substance from the separation  
medium,

wherein at least one of said inlet ports being is the target  
area  $TA^0I$ , and at least one of liquid 1 and/or liquid 2 is being  
dispensed to said target area  $TA^0I$  as droplets through said drop  
dispenser by using said programmed values for the dispensing  
parameters, and wherein liquid 1 being transported is before  
liquid 2 through said microcavity.

9. (currently amended) The method of claim 8, ~~characterized in~~ wherein in that the eluent comprises a gradient with respect to one of its constituents ~~and is said at least one liquid.~~

10. (currently amended) The method of claim 1, ~~characterized in~~ that wherein

a) the spinner is linked to an encoder which gives at least 10,000 grades per revolution, and

b) the time at which the dispensing signal is given is determined by the number of encoder grades between the triggering mark and the triggering position.

11. (currently amended) The method of claim 1, ~~characterized in~~ that wherein the time at which the dispensing signal is given is calculated from the speed of rotation (angular velocity) and the time at which the triggering mark passes the trigger position.

12. (currently amended) The method of claim 1, ~~characterized in~~ that wherein a piezo-driven actuator drives the dispenser which is actuated according to the dispensing signal.

13. (currently amended) The method of claim 1, ~~characterized in~~ that wherein the dispenser is a flow-through dispenser.

14. (currently amended) The method of claim 1, ~~characterized in that~~ wherein the disc comprises one, two or more additional target areas ( $TA^1I$ ,  $TA^2I$ ,  $TA^3I$  etc) which are at the same radial distance from the disc centre as target area  $TA^0I$  ~~inlet port I ( $TA^0I$ )~~.

15. (currently amended) The method of claim 14, ~~characterized in that~~ wherein the disc is a microfluid disc comprising two or more microchannel structures which each comprises an inlet port which is a target area selected among the ~~and having target areas ( $TA^0I$ ,  $TA^1I$ ,  $TA^2I$ ,  $TA^3I$  etc) in form of inlet ports of said microchannel structures.~~

16. (currently amended) The method of claim 14 ~~or 15~~, ~~characterized in that~~ wherein the angular distances between the target areas ~~( $TA^0I$ ,  $TA^1I$ ,  $TA^2I$ ,  $TA^3I$  etc)~~ that are located next to each other are the same or different.

17. (currently amended) The method of claim 2 ~~16~~, ~~characterized in that~~ wherein the shape of the dispensing signal is programmed to comprise a number of pulses such that each droplet formed will correspond to a pulse and that the programmed values for the remaining parameters (a)-(f) will be such that for each dispensing signal at most one droplet per revolution will be dispensed into each of said one or more a target areas area.

18. (currently amended) The method of claim 1, ~~characterized in that~~ wherein

a) the dispenser arrangement comprises an array of dispensers that are under control of the controller; and

b) said drop dispenser is one of said dispensers.

19. (currently amended) An arrangement enabling dispensation of ~~for dispensing liquids~~ droplets of a liquid to a microsystem in the form of a spinning disc comprising a target area ( $TA^0I$ ) in its surface for the droplets, ~~said disc preferably being a microfluidic disc comprising a microchannel structure with an inlet port that corresponds to  $TA^0I$ , characterized in that~~ wherein the arrangement comprises:

a) a spinner for rotating the disc around its axis,

b) a drop dispenser permitting dispensation of droplets to target area  $TA^0I$  from a dispenser orifice of said drop dispenser to target area  $TA^0I$ ,

c) a fixed trigger position positioned outside the disc and comprising a detector which is capable of detecting a triggering mark passing the trigger position when the disc is placed in the spinner and rotated, and

d) a controller which is capable of triggering a dispensing signal for the dispensation of a droplet into target area  $TA^0I$

as a function of the triggering mark passing the trigger position.

20. (cancelled)

Please add the following new claims 21-27.

21. (new) The method of claim 1, wherein said disc is a microfluidic disc comprising a microchannel structure I with an inlet port that is equal to said target are.

22. (new) The method of claim 1, wherein said triggering mark is placed in the circumference of the disc.

23. (new) The method of claim 2, wherein said shape is amplitude, and/or frequency  $f'$  of dispensing pulses.

24. (new) The method of claim 4, wherein said adjustment is handled by the controller.

25. (new) The method of claim 7, wherein the porous bed is a porous monolith or a packed bed of porous or non-porous particles.



26. (new) The method of claim 25, wherein the particles are in beaded form and/or are monosized (monodispersed) or polysized (polydispersed).

27. (new) The arrangement of claim 19, wherein said disc is a microfluidic disc comprising a microchannel structure I with an inlet port that corresponds to target area  $TA^0I$ .